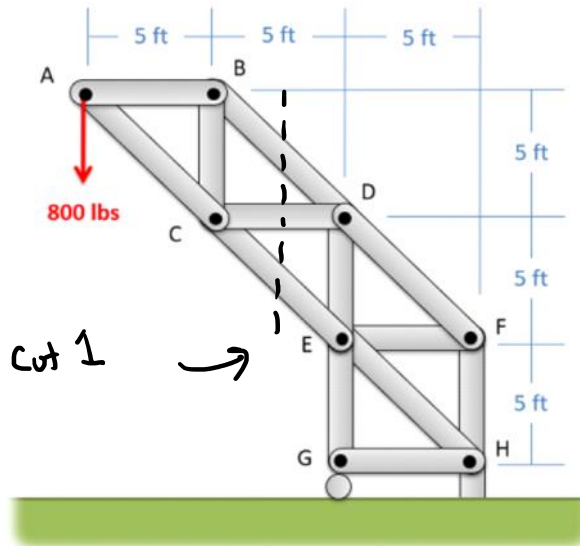
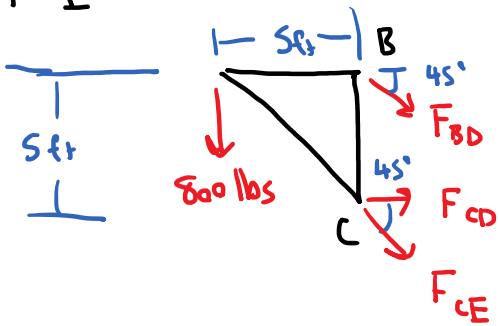


Problem 4

Use the method of sections to find the forces in members AC, BC, CD, and CE. Be sure to indicate if the forces are tensile or compressive.



cut 1



$$\sum F_x = F_{BD} \cos(45) + F_{CD} + F_{CE} \cos(45) = 0$$

$$\sum F_y = -F_{BD} \sin(45) - F_{CE} \sin(45) - 800 = 0$$

$$\sum M_C = (800)(5) - F_{BD} \cos(45)(5) = 0$$

$$F_{BD} = 1131.4 \text{ lbs T}$$

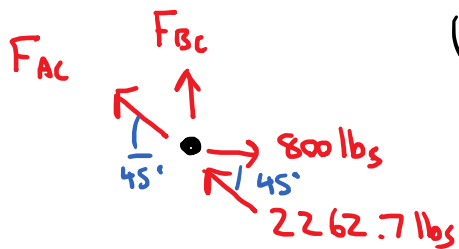
$$-(1131.4) \sin(45) - F_{CE} \sin(45) - 800 = 0$$

$$F_{CE} = \frac{1600}{-\sin(45)} = \underline{\underline{-2262.7 \text{ lbs}}}$$

$$\sum F_x : 1131.4 \cos(45) + F_{CD} - 2262.7 \cos(45) = 0$$

$$\underline{\underline{F_{CD} = 800 \text{ lbs}}}$$

Joint C



$$\sum F_x = -F_{AC} \cos(45) - 2262.7 \cos(45) + 800 = 0$$

$$F_{AC} = -1131.4 \text{ lbs}$$

$$\sum F_y = F_{AC} \sin(45) + F_{BC}$$

$$+ 2262.7 \sin(45) = 0$$

$$F_{BC} = -800 \text{ lbs}$$

Solution:

$$F_{AC} = 1131.4 \text{ lbs C}$$

$$F_{BC} = 800 \text{ lbs C}$$

$$F_{CD} = 800 \text{ lbs T}$$

$$F_{CE} = 2262.7 \text{ lbs C}$$